REMARKS

Favorable reconsideration of the above-identified application is requested in view of the following remarks.

Claims 22-27 are newly added. Claims 1-27 are pending in this application, with Claims 1, 7-9, 14 and 15 being independent.

The Official Action rejects Claims 1-3, 5-8 and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,825,942 to Miyaza, hereinafter *Miyaza* in view of U.S. Published Patent Application No. 2004/0114804 A1, hereinafter *Tanioka*.

The present application describes subject matter relating to image processing. Specifically, the present application deals with a scanned document that may contain both pictures and text. One of the issues addressed in the present application relates to ensuring that the assigned font point size for detected character image data is correct. That is, oftentimes a font point size is incorrectly detected and when the font and point size are applied to the character data, the text does not match a character area in the original image data.

With regard to an embodiment, paragraph [0040] of the present application describes that an image receiver 400 receives image data. A region extractor 404 divides the input image data into character regions and picture regions. Paragraph [0041] describes that the character codes and character size are recognized in an optical character recognition (OCR) processor 408 in character images in the image data. The font and font point sizes are selected from among a plurality of font data stored in a memory based on the recognized character codes and character sizes, *i.e.*, width and height. Paragraph [0045] explains that the font point size is

determined with a font size table 1 having font point sizes that correspond to width and height measurements, together with styles, *i.e.*, times new roman, gothic, etc. Once the font and point size are selected, the characters (selected font and point size) and character regions can be magnified as indicated by the user, *e.g.*, 150%.

Paragraph [0047] of the present application describes a situation where an incorrect font point size is selected. For example, the font point size may have been recognized as 12 point when it actually is 10 point. In that case, the resulting 12 point font will not fit into the character area and will overrun into the picture area once the character data and picture data are combined. Paragraph [0049] describes a correction process formulated to ensure that the font point size is not too large. According to an example of the correction process, a total width of a line of selected characters is calculated according to the value of the font and point size recognized by the optical character recognition, *e.g.*, 40 characters in Arial 12 point, and is compared to a line width of the character region. See paragraph [0044] and Figures 7 and 8 of the present application. If the selected characters are wider than the line width of the character region, the selected font point size must be incorrect and is therefore adjusted.

The image data can be magnified. In that case, the determined font point size and the character region is magnified according to the magnification set by the user. the entire width of the magnified character region is determined and the total width of a line of magnified characters in a line according to the detected and magnified font point size, *e.g.*, Arial 12*150% point, is calculated. If the calculated magnified width of the point size character line (18 point font =12*150%) is larger than the recognized

width of the character area, the detected font size is determined to be incorrect and the selected font point size is adjusted.

When a font point size is determined to be incorrect, the recognized width of the line of characters is divided by the calculated font point size character line width, and the incorrect recognized font point size is multiplied by that ratio. The resulting font point size is rounded down to the nearest whole number and understood to be the correct font point size. An example of this process, as referred to in Figure 8, is shown below.

Character Area Line Width = 28.3 mm

Detected 12 point Character Line Width = 33.6 mm

Font Size (Corrected) = 28.3mm/33.6mm *12 point = 10.07 point

The size 10.07 point is rounded to 10 point

By adjusting the selected font point size, the selected font point size characters are prevented from running over into the picture portion of the scanned image. Basically, the detected font point size is matched with the region of the character image in the image data.

Accordingly, Claim 1 generally defines an image processor comprising:

1) a code recognizer which recognizes character code from a character image included in image data to be processed;

2) a size recognizer which recognizes point size of characters in a character image;

3) a setter which sets a magnification;

4) a magnification changer which enlarges or reduces the image data according to the magnification set by the setter;

5) a memory section which stores a plurality of font data of different point sizes;

6) a selector which selects a font data of a particular point size from among the plurality of font data stored in the memory section based on the character code that is recognized by the code recognizer,

the font point size recognized by the size recognizer and the magnification set by the setter, **to match with a region of the character image in the image data**; and

7) an output section which outputs the font data selected by the selector.

Miyaza discloses an image processor for providing improved readability of characters. *Miyaza* focuses on reduction and enlargement of a scanned image, and determining if the reduced/enlarged text is readable. That is, text that was originally a readable size may be degraded and become too small/distorted and unreadable during reduction. Beginning in column 12, line 46, of *Miyaza*, the reduction process is described. Character data present in the scanned image is detected by the character detecting section 71i of the image transformer section 71. The image processing CPU 74 recognizes the original size of the characters 51 and, based on a reduction ratio, the size of the reduced characters 52 is calculated. That is, the reduction magnification for the entire image is calculated (e.g., 1/2) and then the reduction magnification is applied to the characters 52. After the reduction size of the characters 52 is calculated, the reduced size of the characters 52 is compared to a predetermined reducible threshold value 60. If the size of the reduced characters 52 is larger than or equal to the threshold value 60, the reduced characters 52 are considered to be "readable." However, if the size of the reduced characters 52 is

smaller than the reducible threshold value 60, the reduction characters 52 are not

"readable," a warning is posted, and the process is stopped. <u>The size of the</u>

<u>characters are not matched with a size of a character image region</u>.

Similar to the first embodiment, a second embodiment of *Miyaza* describes a

character recognition section that uses a "superimposing method" in place of the

character detection section in the first embodiment. Beginning in column 13, line 38,

it is described that the "superimposing method" involves the data of various

characters being stored in advance and successively superimposed on the non-

reduced image data. When the image data matches the data of a particular

character, the image data is recognized as being a character (*e.g.*, a, b, c, d…).

Once the characters are recognized, the size of the reduced characters is compared

to the reducible threshold value 60, just as in the first embodiment. Once again, <u>the</u>

<u>size of the characters are not matched with the size of a character image region</u>, but

rather an arbitrary threshold value.

Yet another alternative embodiment described beginning in column 65, line

10, of *Miyaza* involves measuring the "unrecognized character rate", *i.e.*, the

proportion of un-reduced characters that are recognized to the number of reduced

recognized characters that are recognized. That is, the characters of the un-reduced

data and reduced data are recognized as described above, and if the rate of

recognition meets a predetermined threshold, the reduced character is "unreadable".

Here, <u>the size of the character is not determined</u>.

Further, the thirty-sixth and fortieth embodiments disclose stored data of fonts

of various sizes and calling up a stored font of a size of the recognized characters to

replace the recognized characters. <u>The size of the called up fonts is not matched to a size of a character image region.</u>

Tanioka discloses that a recognition unit 7 detects a size and position of a character in an image and recognizes the character in the image data by making reference to a dictionary 6. Size and font type are determined. The character codes are then expanded to dot font information and held as recording dot information in an image buffer 8. See paragraph [0024], line7 through paragraph [0025], line 4.

In *Tanioka*, the width of one character is determined, *e.g.*, a line is 4724 pixels wide and has 40 characters so the character is 118.1 pixels (4724/40) wide. The point size of each character is determined, *e.g.*, 100 dots wide = 12 point font. See paragraph [0027-0028].

The detected characters can be magnified by applying a magnification, *e.g.*, 70% to the character point size (70% x 12 point(100 dots) = 70 dots) and the character width (70% x 118.1 pixels = 82.67 pixels).

The main issue addressed in *Tanioka* is how to present the character width of 82.67 pixels, seeing as .67 pixels cannot be presented. *Tanioka's* solution is to alternately use character widths of 82 pixels and 83 pixels. See Figure 3 where the character widths are 82 or 83 pixels and the character point size is 70 dots (8.4). <u>The font point size is not selected to match a region of a character image.</u>

Claim 1 is allowable at least because neither *Miyaza* nor *Tanioka* disclose selection of a font point size **to match with a region of the character image in the image data**. That is, *Miyaza* does not detect a font point size and certainly does not match a selected font point size to a character image region. *Tanioka* discloses

detection of font point size, but only magnifies such and never matches it to a character image region.

For at least that reason Claim 1 is allowable.

Claims 7 and 8 are allowable for similar reasons as Claim 1 with regard to similar claim language.

Claims 2, 3, 5 and 16-18 are allowable at least by virtue of their dependence from allowable independent claims and because they further define over the cited documents. For example, Claims 16-18 define that the size recognizer recognizes point size of characters by recognizing a font point size of the characters in a line in the character image, calculating the width of the line of the characters based on the width of the recognized font point size, measuring the actual width of the line of characters, **comparing the calculated width to the actual width**, and correcting the recognized point font size according to the ratio of the calculated width to the actual width.

The Official Action relies on *Tanioka* for a disclosure of that subject matter. However, *Tanioka* at least fails to disclose comparing a calculated width to the actual width. That is, *Tanioka* merely measures the point size and the line width of all the characters. *Tanioka* determines the pixel width of each character and the corresponding space after the character. See Figure 3. If the width of the character and the space is not a whole pixel value, *e.g.*, 82.67, alternates whole pixel values (82 and 83) for the width of the characters and spaces are used. This is illustrated in Figure 3 in *Tanioka*. Thus, it is clear that the subject matter of Claims 16-18 are not disclosed by *Tanioka*.

The Official Action rejects Claims 9-15 and 19-21 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,243,549, hereinafter *Ando*, in view of *Miyaza* and further in view of *Tanioka*.

Claim 9 defines an image processor having a combination of features including an instruction section which instructs to output image data of N pages to be processed in M sheets of recording medium, wherein N and M are natural numbers and N is not equal to M. Claims 14 and 15 are directed toward a method and a computer readable program, respectively. They define combinations of features generally directed toward instruction of outputting image data of N pages to be processed in M sheets of recording medium, wherein N and M are natural numbers and N is not equal to M, and recognition of character code from a character image included in the image data of N pages. *Ando* is relied upon in the Official Action for a disclosure of these features.

The combination of features defined by Claim 9 also includes a code recognizer that recognizes character code from a character image included in the image data of N pages and recognizes a point size of the character code, a memory section which stores a plurality of font data, a selector which selects font data from among the plurality of font data stored in the memory section based on the character code recognized by the code recognizer, the font point size recognized by the code recognizer and the magnification set by the setter, **to match with a region of the character image in the image data**, a synthesizer which generates output image data by laying out the font data selected by the selector in the M sheets, and an output section which outputs the output image data generated by the synthesizer. The combinations of features defined by Claims 14 and 15 are amended and now

also include features generally directed toward recognition of character code from a character image included in the image data of N pages and recognition of a point size of the recognized character code, selection of font data from among a plurality of font data based on the recognized character code **to match with a region of the character image in the image data**, generation of output image data in a layout of M sheets by using the selected font data, and outputting of the generated output image data.

Miyaza is relied upon in the Official Action for a disclosure of these features in similar fashion as applied to Claims 1, 7 and 8 discussed above. For similar reasons as set forth above with regard to Claims 1, 7 and 8, *Miyaza* does not disclose at least selection of font data from among a plurality of font data stored in a memory section based on a recognized character code and the point size of the recognized character code **to match an area of the character code in the image data**, which is generally included in Claims 9, 14 and 15.

Claims 10-13 and 19-21 are allowable at least by virtue of their dependence from allowable independent claims, and because they define features that additionally define over the cited disclosures. For example, similarly to Claims 16-18 and Claims 19-21 define recognizing of point size of the characters in the character image is done by recognizing a font point size of the characters in a line in the character image, calculating the width of the line of characters based on the width of recognized font point size, measuring the actual width of the line of characters, **comparing the calculated width to the actual width**, and correcting the recognized point size according to the ratio of the calculated width to the actual width. For similar

reasons as those set forth above with regard to similar language in Claims 16-18, Claims 19-21 are allowable as well.

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Miyaza* in view of U.S. Patent No. 5,533,174 to Flowers, Jr. et al., hereinafter *Flowers*. The Official Action relies on *Flowers* for a disclosure of a communication section which communicates with an external apparatus, wherein a selector selects compatible font data from among a plurality of font data stored in the external apparatus via the communication section. Claim 4 depends from Claim 1 and is allowable for at least the same reasons because *Flowers* does not satisfy the deficiencies of the rejection of Claim 1 discussed above.

New Claims 22-27 are allowable at least by virtue of their dependence upon allowable independent and because they define subject matter relating to selection of font data further based on a size of a region of a character image in image data, which is not disclosed or suggested by the cited documents, alone or in combination.

For the reasons stated above, it is requested that all the objections and rejections be withdrawn and that this application be allowed in a timely manner.

Should any questions arise in connection with this application, or should the Examiner feel that a teleconference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned requests that he be contacted at the number indicated below.

Respectfully submitted,

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